

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of)
)
Northpoint Technology) RM No. 9245
Petition for Rulemaking to Modify)
Section 101.147(p) of the Commission's)
Rules To Authorize Subsidiary Terrestrial)
Use of the 12.2-12.7 GHz Band)
By Digital Broadcast Satellite Licensees)
and Their Affiliates)

OPPOSITION OF DIRECTV, INC.

DIRECTV, Inc. ("DIRECTV")¹ hereby offers the following comments in opposition to the above-captioned Petition for Rulemaking ("Petition") of Northpoint Technology ("Northpoint").

I. INTRODUCTION

Northpoint requests the Commission to amend its rules to permit DBS licensees and their affiliates to obtain secondary, subsidiary communications authorizations for terrestrial use of the 12.2-12.7 GHz band. Essentially, Northpoint wishes the Commission to accommodate Northpoint's experimental, terrestrially-based wireless technology, which would re-use the 12.2-12.7 GHz frequencies in a manner that Northpoint claims would be effectively interference-free relative to DBS operations in the band, and that would provide additional capacity that would enable DBS operators to provide local broadcast signals or high-speed Internet services.²

¹ DIRECTV is a wholly-owned subsidiary of DIRECTV Enterprises, Inc., a licensee in the DBS service and wholly-owned subsidiary of Hughes Electronics Corporation.

² Petition at 2.

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DIRECTV has reviewed the Petition and believes that the service goals of the Northpoint proposal are potentially beneficial. Nevertheless, DIRECTV believes that it is premature at this time to proceed with the rulemaking proceeding that Northpoint requests.

No band is more important to DIRECTV's core business -- and service to more than 3.5 million subscribers -- than the 12.2-12.7 GHz band, which is used to downlink DBS signals from DIRECTV's high-power DBS satellites to individual subscribers across the continental United States using small, 18-inch dish antennas. Indeed, DIRECTV has already expressed its concerns with respect to the extremely grave interference risk posed by the possible introduction of NGSO satellite system operations into the 12.2-12.7 GHz band.³ Now, Northpoint -- albeit in well-intentioned fashion -- has proposed to introduce yet another potentially very disruptive class of terrestrial interference to U.S. DBS operations.

DIRECTV believes that the introduction of new interference sources at 12 GHz simply should not occur until it is conclusively demonstrated that such sources will not create unacceptable levels of interference to both existing and future DBS operations. More than one billion of dollars has been invested by the DBS industry in the development of the spectrum at 12.2-12.7 GHz to provide direct-to-home satellite services. As a potential interference source to primary DBS operations using these frequencies, Northpoint has failed to show that its system can co-exist with the DBS service without causing unacceptable levels of interference to U.S.

³ See Application of SkyBridge L.L.C. for Authority to Launch and Operate the SkyBridge System, File Nos. 48-SAT-P/LA-97, 89-SAT-AMEND-97, Reply of DIRECTV, Inc., Hughes Communications, Inc. and Hughes Network Systems (Mar. 20, 1998); Petition to Deny of DIRECTV, Inc., Hughes Communications, Inc. and Hughes Network Systems (Dec. 15, 1997); Amendment of Parts 2.106 and 25.202 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems, RM No. 9147, Opposition of DIRECTV, Inc. (Aug. 27, 1997).

DBS operations. Northpoint's testing of its proposed system to date has been inadequate and its technology stands unproven

More generally, the Commission's introduction of any new services into the 12 GHz band should be guided by a comprehensive policy governing the introduction of new interference sources that would use the 12 GHz frequencies. The stakes for the future of the DBS industry in the United States are too high to administer the introduction of such services on a piecemeal basis. Even if such services are secondary, they will raise the system noise floor for the operation of DBS systems, create the potential for interference with existing DBS systems, and ultimately could stifle DBS development and growth within the 12 GHz band. That result must be avoided, especially if DBS is to continue to develop as the most viable potential competitor to incumbent cable television systems -- a policy goal that Northpoint itself acknowledges is vitally important.⁴ The Petition should be denied.

II. DISCUSSION

A. Northpoint's Proposed Operations Would Create Unacceptable Levels Of Interference To Current And Future DBS Operations

As a threshold matter, Northpoint's assumptions regarding acceptable levels of interference to DBS operations are fundamentally in error. Terrestrial transmissions at the interference levels indicated in the Petition in fact are completely unacceptable with respect to co-existence with DBS operations-- and this is true *with or without* Northpoint's proposed implementation of terrestrial transmission power control.

⁴ Petition at 7.

Northpoint's proposed operations fail to recognize the fundamental notion that a DBS link can receive significant harmful interference *even when there is no apparent loss of picture quality under clear sky conditions*. Any added interference, regardless of whether it causes a video or audio breakup or a complete loss of signal under clear sky conditions, nonetheless reduces the clear sky margin that has been specifically designed into the DBS link to compensate for all but the most severe rain fade conditions. Thus, Northpoint's assumption that engineering its technology to permit DBS system operation using Carrier-to-Noise plus Interference ("C/(N+I)") values of 6 or 4.8 dB will yield "harmonious co-existence of co-channel terrestrial and satellite signals"⁵ is simply misplaced.

Specifically, Northpoint's proposed interference levels would reduce the available clear sky margin for co-existence with DBS operations to zero. Yet, adequate levels of clear sky margin must be preserved, and if possible improved, for both current operational and planned future DBS systems if the service is to continue to grow. As the 12.2-12.7 GHz band becomes increasingly occupied by additional DBS satellites and systems in the coming years, interference levels inevitably will increase. Without an adequate interference protection margin, DBS operations and service to millions of subscribers will be put at risk. For this reason, additional sources of interference with DBS operations such as those envisioned in the Petition, even if they are introduced on a secondary basis, must be carefully considered by the Commission, and must meet a substantial burden of proving that it will not create unacceptable levels of interference, before they are introduced.

⁵ *Id.* at 15.

The Northpoint proposal does not meet this burden. In the case where Northpoint's proposed terrestrial transmission would operate without any power control to reduce transmission power in proportion to local rain fade conditions, the added interference to DBS receivers should at least be equivalent to that allowed in Appendix 30 of the International Telecommunications Union ("ITU") Radio Regulations for inter-service inter-regional FSS interference, and may need to be better. Annex 4 of Appendix 30 allows for an I/N ratio of -23 dB for an inter-service interference source.⁶ The use of a typical DIRECTV link budget C/N value of 11.4⁷ would call for a required minimum C/I value of 34.4 dB.

This is far removed from the Petition's implied C/I value of 5.9 dB. (Combining a typical DIRECTV link C/N value of 11.4 dB with a C/I value of 5.9 dB yield's the Petition's proposed C/(N+I) threshold value of 4.8 dB.) There /consequently is no basis for proceeding to initiate a rulemaking proceeding until Northpoint at a minimum demonstrates that its system will not present unacceptable levels of interference to DBS operations.

B. Northpoint Technical Design Questions, Inadequate Testing And Field Trials

The Petition should also be denied because there are fundamental analyses that should be performed -- and probable fundamental changes made to -- the technical design of Northpoint's proposed terrestrial service before it can even be considered as viable. Such

⁶ See Concepts for the Development of Sharing Criteria vs. Protection Criteria for GSO BSS and Non-GSO FSS Sharing in the Appendix 30 Bands. JTG 4-9-11/USA-18, Rev. 1 (JTG 4-9-11/46) (Feb. 25, 1998), at Table 1, Column E, Row 10.

⁷ See Application of Hughes Communications Galaxy, Inc. to Launch and Operate a Ground Space; Applications of Hughes Communications Galaxy for Minor Modification of a Construction Permit; File Nos. DBS-84-02/94-09M; DBS-84-02/94-10M (June 1994), "Additional Supportive Information" (Aug. 30, 1994) Table 4-1A, Link Budget (for Chicago).

analyses in DIRECTV's view should include: (i) a more realistic examination of the sizes of the "reliable service areas" and "exclusion zones," given the need to provide operational margins to encompass both good and poor field installations of DBS antennas and the need to provide acceptable C/I levels; and (ii) a feasibility analysis and requirements definition study on the power control system necessary to protect DBS transmissions during rain fade conditions.

There is no evidence that Northpoint has performed such analyses or design exercises. Such examinations are necessary to understand if it is even possible to achieve the extremely accurate power control that would be needed to protect against the highly-localized and rapidly-occurring rain fades that are facts of life in the DBS downlink band. The Petition should not be granted until these fundamental questions surrounding Northpoint's proposal are addressed.

In a similar vein, DIRECTV believes that the initial tests performed by Northpoint are woefully inadequate to support FCC initiation of the proposed rulemaking proceeding. Even a cursory review of the Petition shows that Northpoint's testing did not concentrate on appropriate interference levels that would account for an adequate protection margin for DBS operations or the addition of other primary DBS operations at 12.2-12.7 GHz. Instead, Northpoint's testing has focused only on those interference levels that would actually cause a failure of the DBS link, and assumed that this was adequate. If the DBS downlink band is to continue to remain viable, this is an inherently unrealistic and damaging assumption. Moreover, the fundamental design questions mentioned above have not been addressed in any part of Northpoint's test plan.

Northpoint's test results to date cannot and should not be used as the basis for initiating a rulemaking proceeding. Furthermore, DIRECTV urges the Commission to require

that any additional testing of Northpoint's system, if undertaken in areas encompassing DIRECTV subscribers, (1) should be fully approved by DIRECTV and other affected DBS service providers before such testing is initiated, and (2) should be designed so that the presence of test signals does not affect the quality of service of existing DBS subscribers in any way.

C. Cumulative Interference Sources Should Not Be Allowed To Impede DBS Services

It is clear that the use of the 12.2-12.7 GHz band by primary or secondary services, at any power level, increases the operational noise floor for DBS systems. This fact reduces DBS link availability and thus reduces the quality of DBS service. Correspondingly, this consequence of additional 12.2-12.7 GHz operations means that the Commission must proceed very cautiously in authorizing new potential sources of 12 GHz interference, such as Northpoint.

As the Commission is well aware, there are still many secondary users in the 12.2-12.7 GHz band. Although the operations of these secondary users have posed a significant risk to DBS operations, DIRECTV over the past four years has worked with many of these users in conjunction with DIRECTV subscribers to resolve specific cases of interference as they have arisen.⁸ In most cases, these secondary users have been point-to-point microwave systems.

The importance of understanding all of the parameters associated with DBS downlink performance becomes even more compelling, however, with the prospect of hundreds

⁸ As primary users of the band, DIRECTV has the right to request the Commission to shut down secondary terrestrial users that interfere with DIRECTV subscribers' receipt of service. See Public Notice, *Initiation of Direct Broadcast Satellite Service -- Effect on 12 GHz Terrestrial Point-to-Point Licensees in the Private Operational Fixed Radio Service*, 10 FCC Rcd 1211 (1994). In an effort to resolve such situations cooperatively, DIRECTV has relocated subscriber dishes at its own expense or otherwise reduced the interference to acceptable levels.

of point-to-multipoint broadcast towers being introduced into the 12 GHz band, as Northpoint has proposed. Any system permitted to use the band and raise the noise floor to the extent that Northpoint suggests would effectively reduce DIRECTV's service availability to extremely low levels. As has been noted, Northpoint proposes the addition of power control systems to lower interference levels during rain and thus improve availability, but these systems are as yet undesigned, unproven and likely very complicated, which further increases the risk to DBS reception.

More fundamentally, because of the importance of the noise floor to DBS operations, it is neither sound public policy nor sound spectrum management to deal with 12 GHz interference issues on a piecemeal basis. The operations of non-DBS users of the 12.2-12.7 GHz band -- which could include the current terrestrial microwave secondary users of the band, Northpoint, the proposed SkyBridge NGSO system, or other NGSO systems -- will add system noise at 12 GHz. And these sources of noise will be cumulative with respect to any other noise source in the DBS downlink band. Such sources simply cannot be considered singly. If they are, the consequence will be that, over time, the 12 GHz band will become interference-limited -- a development that would *eliminate* the possibility of future technical innovation by DBS operators.

As the Commission is aware, DIRECTV has been active in trying to define acceptable interference levels from secondary interference sources so that multiple uses of the 12 GHz band may be possible, while at the same time protecting its tremendous investment in the band and the quality of service of literally millions of DIRECTV subscribers. However, until such combined limits are established, DIRECTV cannot agree to -- and the Commission should not impose -- interference limits for new proposed 12 GHz services on a piecemeal basis.

A number of studies are underway to assess the amount of added interference noise, if any, that DBS systems can tolerate and still provide high quality DBS services to subscribers, both today and in the future. This work should provide the necessary information to allow viable parameters for successful co-existence to be developed. Until that work is completed, however, it would be premature and potentially disastrous for the Commission to initiate a proceeding to amend its service rules as Northpoint has proposed.

III. CONCLUSION

For the foregoing reasons, DIRECTV respectfully recommends that the Petition be denied at this time.

Respectfully submitted,

DIRECTV, INC.

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DECLARATION OF PAUL R. ANDERSON

I. Paul R. Anderson, hereby declare as follows:

1. I am Director, Communications Systems for DIRECTV Enterprises, Inc. I am an engineer by training and am familiar with the technical and interference characteristics of DIRECTV's Direct Broadcast Satellite system, the requirements of Part 25 and Part 100 of the Commission's rules, and the interference and technical issues referenced in the foregoing Opposition.

2. I have reviewed the foregoing filing from a technical perspective, and the information found therein is true and accurate to the best of my knowledge, information and belief.



Paul R. Anderson
Director, Communications Systems
DIRECTV Enterprises, Inc.

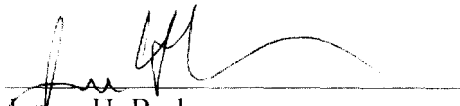
April 20, 1998

CERTIFICATE OF SERVICE

I hereby certify that on this 20th day of April, 1998 that a copy of the Opposition of DIRECTV, Inc. was hand-delivered to:

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James H. Barker